

CLAIMS

1. Aflavoprotein (TcOYE) derived from *Trypanosoma cruzi*,
having an enzymatic activity to reduce prostaglandin H₂ to
5 prostaglandin F_{2α}.

2. A recombinant protein of (a), (b) or (c) below:

(a) a protein comprising the amino acid sequence
represented by SEQ ID NO: 2

(b) a protein (hereinafter sometimes referred to as
10 "variant TcOYE") comprising an amino acid sequence having
deletion, substitution or addition of one or more amino acids
in the amino acid sequence represented by SEQ ID No: 2, and
having an enzymatic activity to reduce prostaglandin H₂ to
prostaglandin F_{2α}, and

15 (c) a protein comprising a fragment of the amino acid
sequence represented by SEQ ID NO: 2, and having an enzymatic
activity to reduce prostaglandin H₂ to prostaglandin F_{2α}.

3. A gene encoding the protein according to claim 1 or
2.

20 4. The gene according to claim 3 comprising DNA
comprising the base sequence of SEQ ID NO: 1.

5. An antibody to the protein according to claim 1 or
2.

6. A method of screening trypanocidal drugs for
25 *Trypanosoma cruzi* infection, comprising the steps of:

(i) preparing the protein according to claim 1 or 2 and
prostaglandin H₂,

(ii) incubating the protein and prostaglandin H_2 with a candidate compound in the presence of NADPH or NADH, and
(iii) examining whether or not reduction of prostaglandin H_2 to prostaglandin $F_{2\alpha}$ is inhibited.

5 7. A method of screening trypanocidal drugs for *Trypanosoma cruzi* infection, comprising the steps of:

(i) incubating the protein according to claim 1 or 2 with a candidate compound in the presence of NADPH or NADH, and
(ii) determining whether or not the compound produces
10 radicals as a result of one-electron reduction by the protein.

8. A method of diagnosing *Trypanosoma cruzi* infection, comprising the steps of:

(i) incubating a specimen or the extract of a specimen with the antibody according to claim 5, and

15 (ii) examining whether or not an antigen/antibody complex forms.

9. A method of diagnosing *Trypanosoma cruzi* infection, comprising the steps of:

(i) incubating a specimen or the extract of a specimen
20 with the gene according to claim 3 or a fragment thereof, and

(ii) examining whether or not the specimen or the extract of the specimen hybridizes with the gene or a fragment thereof.

10. A method of diagnosing *Trypanosoma cruzi* infection, comprising the steps of:

25 (i) preparing DNA collected from a specimen or cDNA by synthesis from mRNA in a specimen using reverse transcriptase,

(ii) performing PCR using said DNA or said cDNA as a template, and using the nucleotide sequence contained in the cDNA of TcOYE of SEQ ID NO: 1 as a sense primer and an antisense primer, and

5 (iii) examining whether or not the cDNA of TcOYE is amplified.